U.S.P.S. Airbill # ER 302 415 746 US Deposit Date: April 15, 2004

APPLICATION FOR UNITED STATES LETTERS PATENT

FOR A

CAMPFIRE SAFETY APPARATUS

Specification: 18 Total Pages including Claims & Abstract
Claims: 22 Total Claims including 3 Independent and 19 Dependent Claims
Drawings: 8 Figures in 8 Drawing Sheets

Inventor: Marion J. Grillot, a resident of Versailles, Ohio, USA, (A U.S. citizen)

Attorney: Docket No. 040220.002
David J. Dawsey
Gallagher & Dawsey Co., L.P.A. (Customer Number 34,142)
Telephone: (937) 554-8294

TECHNICAL FIELD

The present invention relates to the field of campfires, in particular, to a safety apparatus for placement around a campfire so as to prevent accidental contact with the flames and high temperature embers.

BACKGROUND OF THE INVENTION

Campfire burns account for over 65% of all recreational burns in many areas of the country. Additionally, over 50% of such recreational burns are inflicted upon children. While many campfire burns are a result of direct contact with an open flame, an alarming number are the result of contact with smoldering embers. This is due to the fact that people are much more careful around an open flame than a pile of embers.

Adults and children seem to be drawn to open campfires. They are often mesmerized by the open flames and have a tendency to want to play with the fire by poking it, or adding fuel to the flames. Some of the dangers associated with campfires have been reduced through the wide-spread use of fire rings. Today, campfires are generally created within a fire ring which houses the logs, or other fuel, and a portion of the flames. Fire rings are generally made of steel and are 28" to 34" in diameter and 12" to 18" high. The prime benefit of creating a campfire within a fire ring is that the flames are restrained horizontally, thereby minimizing the likelihood of flames spreading and causing unintended fires.

Fire rings do however have some drawbacks. For instance, a camper cannot spread out the ashes and embers of a campfire that was created within a fire ring. Accordingly, the ashes and embers remain tightly confined in the fire ring and remain hot much longer than if even slightly spread about. Additionally, children often mistake fire rings filled with ashes for

sandboxes. This is compounded by the fact that many campers use sand to extinguish their campfires. This practice actually permits the coals to burn for hours, further heightening the risk to children. Further, countless burns are the result of a camper contacting the metal structure of the fire ring because they failed to appreciate that the surface temperature of the fire ring is often several hundred degrees Fahrenheit. Lastly, fire rings create a tripping hazard for the inattentive camper chasing a frisbee during the day or stumbling around the campsite after dark.

Campers currently lack the appropriate device to protect themselves from the dangers associated with fire rings, and their contents. Accordingly, the art has needed a campfire safety device that surrounds the campfire fire ring and prevents individuals and animals from unintentional contact with fire rings, and their contents.

SUMMARY OF INVENTION

In its most general configuration, the present invention advances the state of the art with a variety of new capabilities and overcomes many of the shortcomings of prior devices in new and novel ways. In its most general sense, the present invention overcomes the shortcomings and limitations of the prior art in any of a number of generally effective configurations. The instant invention demonstrates such capabilities and overcomes many of the shortcomings of prior methods in new and novel ways.

The campfire safety apparatus of the present invention shields people and animals from unintentional contact with a campfire, or the products thereof. Generally, a campfire is created within a fire ring which constrains a plurality of logs, or other fuel, and a portion of the flames. The flames resulting from a campfire created within a fire ring are restrained horizontally and generally extend vertically less than 24" from the top of the fire ring. Installation of the campfire

safety apparatus around the fire ring creates an effective barrier for shielding potential burn victims from the flames or smoldering coals.

The entire apparatus may be a single unitary unit for permanent mounting around campsite fire rings, or the apparatus may be constructed of a number of rigid safety panels releasably joined together to create an apparatus that is portable for easy transport by weekend campers. One important attribute of the apparatus is that the top edge, or upper rail, is above the campfire flame height such that a child or adult cannot trip over the apparatus and fall into the fire ring. Additionally, the lower edge of the apparatus, or lower rail, of the rigid safety panel generally contacts the ground so that the apparatus serves as an effective barrier over its entire height.

The size and construction of the rails may vary with the particular application. For instance, permanent installations may utilize heavy gauge components, while portable embodiments incorporate lighter gauge components to minimize the weight of the panels. Rail spacing creating opening sizes of less than one square foot has been found to be particularly effective for portable embodiments. Such spacing allows easy access through the panels for cooking or rearranging the fuel, yet prevents adults, children, and animals from entry into the fire ring.

Portable embodiments include a plurality of portable interlocking rigid safety panels. Such interlocking rigid safety panels incorporate cooperating pin receivers that lock the panels together when a pin is inserted. In certain embodiments the pins extend through the cooperating pin receivers and terminate into the ground to anchor the apparatus and increase its ability to resist tipping over. Further embodiments incorporate specific devices to enhance the anchoring capabilities of the pin.

Additionally, any of the rigid safety panels may further include multiple sections to facilitate access to the fire ring for cooking, moving logs, or any number of other activities. Such multiple sections may be configured to rotate vertically, thereby creating a fold-down door, or horizontally, thereby creating a side-swinging door or gate. A further embodiment of the apparatus may include a rigid top panel to totally enclose the campfire. The campfire safety apparatus may also incorporate any number of campfire accessory tools that conveniently attach to the rigid safety panel. Such tools may include a prep table for preparing items for barbecuing, a hanger apparatus for holding cooking tools, log pokers, and any other tool that may be needed around a campfire. Additionally, the apparatus may incorporate auxiliary supports to secure the apparatus to the campfire fire ring and enhance the stability of the apparatus.

These variations, modifications, alternatives, and alterations of the various preferred embodiments may be used alone or in combination with one another as will become more readily apparent to those with skill in the art with reference to the following detailed description of the preferred embodiments and the accompanying figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Without limiting the scope of the present invention as claimed below and referring now to the drawings and figures:

FIG. 1 shows an elevated perspective view of the apparatus, not to scale;

FIG. 2 shows an elevated perspective view of the apparatus, not to scale;

FIG. 3 shows an elevation view of the apparatus, not to scale;

FIG. 4 shows an elevated perspective view of an embodiment of the apparatus, not to scale;

FIG. 5 shows an elevated perspective view of the apparatus of FIG. 4, not to scale;

FIG. 6 shows an elevated perspective view of an embodiment of the apparatus, not to scale;

FIG. 7 shows an elevated perspective view of an embodiment of the apparatus, not to scale; and

FIG. 8 shows an elevated perspective view of an embodiment of the apparatus, not to scale.

Also, in the various figures and drawings, the following reference symbols and letters are used to identify the various elements described herein below in connection with the several figures and illustrations: F, G, L, and R.

DETAILED DESCRIPTION OF THE INVENTION

The campfire safety apparatus **50** of the instant invention enables a significant advance in the state of the art. The preferred embodiments of the apparatus **50** accomplish this by new and novel arrangements of elements and methods that are configured in unique and novel ways and which demonstrate previously unavailable but preferred and desirable capabilities. The detailed description set forth below in connection with the drawings is intended merely as a description of the presently preferred embodiments of the invention, and is not intended to represent the only form in which the present invention may be constructed or utilized. The description sets forth the designs, functions, means, and methods of implementing the invention in connection with the illustrated embodiments. It is to be understood, however, that the same or equivalent functions and features may be accomplished by different embodiments that are also intended to be encompassed within the spirit and scope of the invention.

Referring to FIG. 1, the campfire safety apparatus **50** of the present invention shields people and animals from unintentional contact with a campfire. Generally, a campfire is created within a fire ring **R** which constrains a plurality of logs **L**, or other fuel, and a portion of the flames **F**, as illustrated throughout. Fire rings **R** are generally 28" to 34" in diameter and 12" to 18" high. Fire rings **R** are commonly constructed of sections of 55 gallon drums. The flames **F** resulting from a campfire created within a fire ring **R** are restrained horizontally and extend vertically less than 24" from the top of the fire ring **R**. Installation of the campfire safety apparatus **50** around the fire ring **R** creates an effective barrier for shielding potential victims from the flames **F**.

With reference now to FIG. 2, the campfire safety apparatus **50** may include at least one rigid safety panel **100** having a lower rail **110**, an upper rail **120**, and a plurality of interconnected intermediate rails **150**. The entire apparatus **50** may be a single unitary unit for permanent mounting around campsite fire rings **R**, or the apparatus **50** may be constructed of a number of rigid safety panels **100** releasably joined together to create an apparatus **50** that is portable for easy transport by weekend campers. Similarly, the apparatus **50** may be virtually any geometric configuration including, but not limited to, the rectangular configuration of FIG. 2 or the circular configuration of FIG. 6. One important attribute of the apparatus **50** is that the upper rail **120** is above the campfire flame **F** height such that a child or adult cannot trip over the apparatus **50** and fall into the fire ring **R**. The height of the upper rail **120** above the open flame **F**, dimension **400** in FIG. 3, varies but experimentation has shown that an upper rail **120** height of approximately 36" above the ground **G** ensures that the upper rail **120** is typically at least 12" above the flames **F**.

The lower rail **110** of the rigid safety panel **100** generally contacts the ground **G** so that the apparatus **50** serves as an effective barrier over its entire height, from the lower rail **110** to the upper rail **120**. The intermediate rails **150** provide structural integrity and increase the effectiveness of the panels **100** as a barrier. The intermediate rails **150** may be interconnected to further increase the strength and rigidity of the safety panel **100**. Further, the spacing of the rails **110**, **120**, **130**, **140**, **150** may be uniform, variable, vertical and horizontal, or at an angle. For instance, the rails **110**, **120**, **130**, **140**, **150** may be close together nearer the lower rail **110** and gradually expand nearer the upper rail **120**.

Similarly, the size and construction of the rails **110**, **120**, **130**, **140** and intermediate rails **150** may vary with the particular application. For instance, permanent installations may utilize heavy gauge components, while portable embodiments incorporate lighter gauge components to minimize the weight of the panels **100**. As such, a free area ratio of at least fifty percent has been found effective for permanent installation embodiments, while it may be desirable for portable embodiments to have a free area ratio of at least eighty-five percent. As used herein, the free area ratio is the ratio of unobstructed free area to the total area of the of the rigid safety panel **100**. Experimentation has shown that a preferred construction for a portable embodiment consists of the use of ½" diameter steel rod for the perimeter rail (lower **110**, upper **120**, first sidewall **130**, second sidewall **140**) and ¼" diameter steel rod for the intermediate rails **150**. Additionally, one with skill in the art will recognize that it may be preferable to finish the components with corrosion-resistant high-temperature paint. Further, rail spacing creating opening sizes of less than one square foot has been found to be particularly effective. Such spacing allows easy access through the panels **100** for cooking or rearranging the fuel, yet prevents adults, children, and animals from entry into the fire ring **R**.

Referring again to FIG. 2, in the embodiments having a plurality of portable interlocking rigid safety panels **100**, each panel **100** has a lower rail **110**, an upper rail **120**, a first sidewall rail **130** having a pin receiver **132**, and a second sidewall rail **140** having a pin receiver **142**. The pin receivers **132, 142** on adjacent rigid safety panels **100** cooperate to receive a pin **200**, having a proximal end **210** and a distal end **220** that releasably secures the adjacent panels **100** together. In one particularly effective and economical embodiment, the pin receivers **132, 142** are constructed of sections of ¼" pipe.

In one embodiment the distal end **220** of at least one of the pins **200** extends through the cooperating pin receivers **132, 142** and terminates into the ground to anchor the apparatus **50**, as seen in FIG. 1 and FIG. 3. Such anchoring increases the ability of the apparatus **50** to resist tipping over. Further embodiments incorporate specific devices to enhance the anchoring capabilities of the pin **200**. One such device, illustrated in FIG. 5, incorporates an arrowhead shaped anchor **222** on the distal end **220** of at least one of the pins **200** to facilitate easy ingress of the distal end **220** into the ground, resist egress from the ground, and prevent rotation. An alternative embodiment, also shown in FIG. 5, includes a screw **224** on the distal end **220** of the pin **200** to facilitate easy ingress of the distal end **220** into the ground and resist unintended egress from the ground. The proximal end **210** of the pin **200** may include a stop **212** to prevent the pin **200** from sliding through the cooperating pin receivers **132, 142**, as shown in FIG. 2. The stop **212** may be formed simply by bending the proximal end **210** of the pin so that it cannot pass through the pin receivers **132, 142**, or incorporating a nut or washer at the proximal end **210**.

Any of the portable interlocking rigid safety panels **100** may further include multiple sections to facilitate access to the fire ring **R** for cooking, moving logs **L**, or any number of other activities. One embodiment, illustrated in FIG. 4 and FIG. 5, incorporates an upper panel section

160 and a lower panel section **170**. The sections **160, 170** are rotably joined at an intermediate rail **150** so that the upper panel section **160** may rotate down about an intermediate hinge **180** to permit greater access to the campfire fire ring **R** and its contents. This embodiment may also incorporate a retainer **190** to secure the upper panel section **160** in place when greater access is not required. The apparatus **50** may also incorporate embodiments having multiple panel sections that rotate horizontally rather than vertically, thereby creating a gate or door to the fire ring **R**.

A further embodiment of the apparatus **50** may include a rigid top panel **600** to totally enclose the campfire, as seen in FIG. 8. The rigid top panel **600** has a perimeter rail **610** and a plurality of interconnected intermediate rails **620**, wherein the perimeter rail **610** cooperates with the rigid safety panel upper rail **120** to prevent unintentional contact with the campfire from above the upper rail **120**. The top panel **600** may be connected to any of the rigid safety panels **100** via a hinge **630** so that the top panel **600** may be easily lifted and propped open when access to the fire ring **R** is necessary.

The campfire safety apparatus **50** may further include any number of campfire accessory tools **300** having a plurality of connection devices **310** that cooperate with the rails of the rigid safety panel **100** to releasably fasten the tool **300** to the rigid safety panel **100**. Such tools **300** may include a prep table for preparing items for barbecuing, a hanger apparatus for holding cooking tools, log pokers, and any other tool that may be needed around a campfire. The prep table illustrated in FIG. 2 includes interlocking arms **312** to secure the table to the panel **100** and an angle support **314** to further stabilize the table.

To further increase the stability of the apparatus **50** it may incorporate auxiliary supports **500** to secure the apparatus **50** to the campfire fire ring **R**. The auxiliary supports **500** may incorporate a telescoping rod **510** with a distal end **512** and a proximal end **516**, a fire ring pad

514 attached to the distal end to rigidly secure the support **500** to the fire ring **R**, and a panel interface **518** at the proximal end **516** to rigidly secure the support **500** to the rigid safety panel **100**. The adjustability of the telescoping rod **510** permits the auxiliary support **500** to be used with fire rings **R** of different diameters.

Numerous alterations, modifications, and variations of the preferred embodiments disclosed herein will be apparent to those skilled in the art and they are all anticipated and contemplated to be within the spirit and scope of the instant invention. For example, although specific embodiments have been described in detail, those with skill in the art will understand that the preceding embodiments and variations can be modified to incorporate various types of substitute and or additional or alternative materials, relative arrangement of elements, and dimensional configurations. Accordingly, even though only few variations of the present invention are described herein, it is to be understood that the practice of such additional modifications and variations and the equivalents thereof, are within the spirit and scope of the invention as defined in the following claims. The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or acts for performing the functions in combination with other claimed elements as specifically claimed.